

# ABSTRACT

The present invention provides implantable physiological or pathophysiological biosensors. The subject biosensors comprise tissue or cells capable of carrying out a physiological or pathophysiological function, which can be used to monitor a chemical, physiological or pathophysiological variable associated with the physiological or pathophysiological function. In one embodiment, the tissue or cells are coupled via an electrical interface to an electronic measuring device or an electronic amplifying device. In another embodiment, the tissue or cells are coupled via an electrical interface to endogenous tissue or cells, including the blood. Preferably, the tissue or cells are excitable tissue or cells such as cardiac tissue or cells and neuronal tissue or cells. The subject biosensors may be placed, inserted or implanted in any animal including but not limited to a mouse, rat, rabbit, pig, cat, dog, cattle, horse, sheep or human. The present invention also provides various methods which employ a biosensor of the present invention. Such methods include a method of monitoring physiological or pathophysiological function, a method of regulating output of a signal to a subject, and a method for controlling heart function.